HR-203 Transverse Joint Sealing with Various Sealants

Abstract

Deterioration of joints and joint related distress of PCC pavements continue to be major maintenance problems. These joints are constructed to control cracking and provide for movement due to variation in temperature. The difficulty of maintaining these joints in a sealed condition is primarily caused by the opening and closing of the joint, but movement produced by traffic is a contributing factor. Unfortunately, the poured sealants and present joint design and construction practices have not been able to adequately provide for this movement. Even under ideal conditions, the life of most poured sealants rarely exceeds three years. The bond between the sealant and the concrete fails and allows the joint to leak.

The objective of this research was to evaluate the performance of PCC pavement contraction joints utilizing a variety of sealants and joint preparations and to identify an effective sealant system. The variables to be evaluated were:

1. Sealant material
2. Joint preparation
3. Size of saw cut (sealant reservoir)
4. The use of backing material

A Dallas county highway project (R30 in Dallas county near Granger) was selected in 1978 for testing various sealing regimens. Six different sealant materials, two types of backer and a variety of joint preparations were used in the research.

Conclusions:

1. The type of cleaning of the transverse saw cut had very little bearing on the performance of the joint sealant system. The sandblast cleaning, however, exhibited a slightly better performance than did air jet or water blast cleaning.
2. The performance of the joint sealant material was not significantly affected by the width of the saw cut.
3. The performance of the joint depended primarily upon the join sealant material. The Dow Corning 888 sealant material provided excellent performance. All other sealant material exhibited predominate failure.